Innovation Areas:

Energy

BioDevice/ BioPharma

Medical Imaging & Brain Medicine

Nano-technology

Imaging & Digital Media

USTAR

Turning innovation into industry.

Bringing Energy Innovation to the Market

Ted McAleer, Executive Director

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USTAR: A Strong Fit with Utah priorities

Governor's
PRIORITIES

Economic Development

Public and Higher Education

Energy Security

Infrastructure

USTAR's role in Economic Development

What is the nationally recognized technology-based economic development (TBED) framework?

1. Expanding the Research Infrastructure
2. Commercializing Research
3. Improving the Competitiveness of Existing Industries
4. Enhancing the Science and Technology Workforce
5. Increasing Access to Capital
6. Building Entrepreneurial Capacity

What USTAR programs are in place relative to TBED framework and what are the results to date?

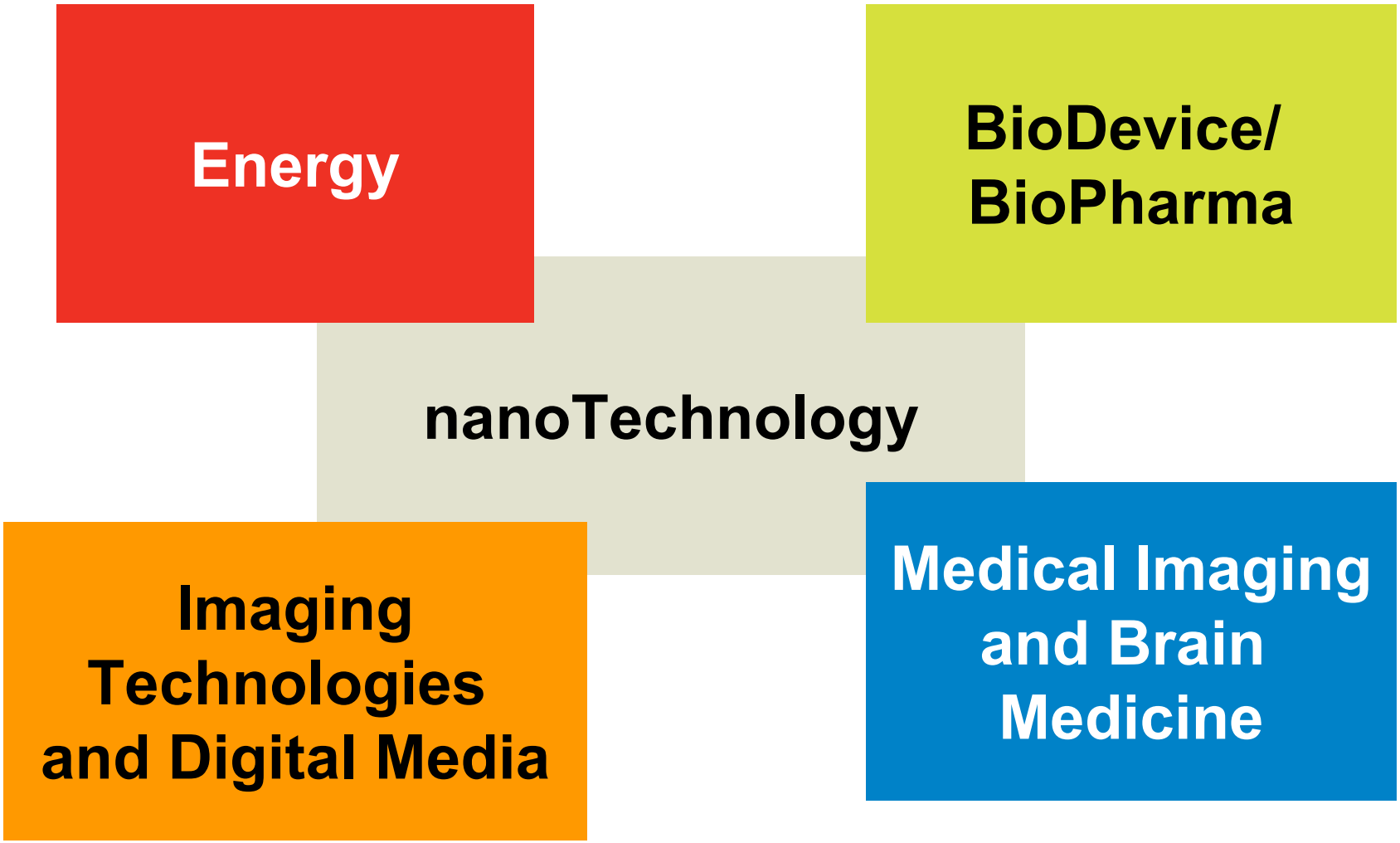
Utah Science Technology and Research (USTAR)

USTAR Research Team Funding

Technology Outreach Program

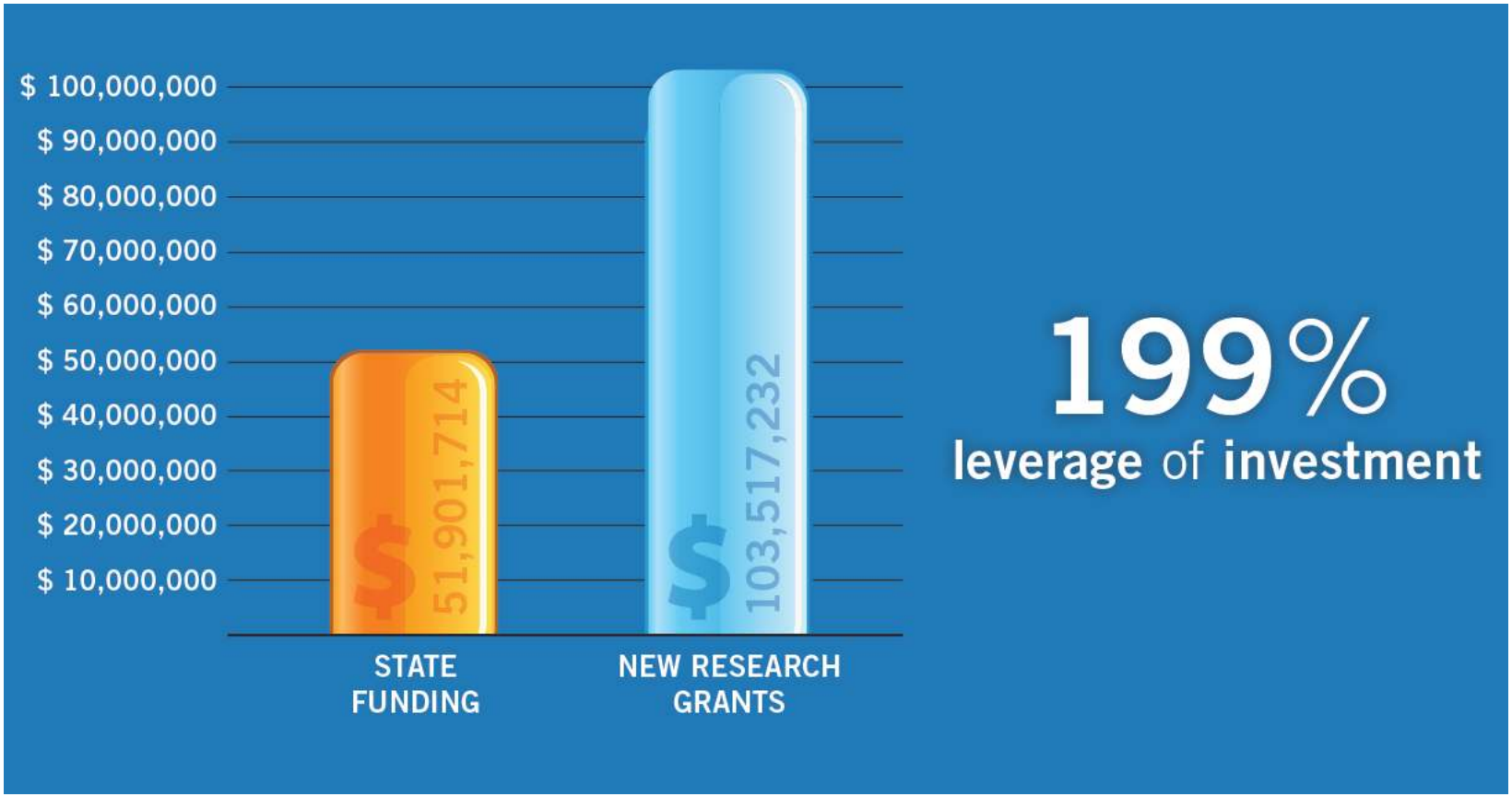
USTAR Buildings & Infrastructure

Program 1: USTAR Research Focus Areas



Program 1: Recruiting All-Star Talent

Leveraging the State's investment



* $63 mm grants won FY2007-FY2014
Plus DOE subcontract & other
federal energy funding committed for
FY2011 ($40 mm)

Energy Innovation Area

USTAR Energy Team

Alternative Energy_Batteries: Coming Soon

Alternative Energy_Solar: Kelly Minteer, Ph.D.

Biofuels: Jeff Muhs, Kevin Shurtleff, Ph.D. and Foster Agblivar (Jan11)

Carbon Engineering: BJ McPherson, Ph.D.

Energy Dynamics Lab at Utah State University: Alan Marchant, Ph.D.

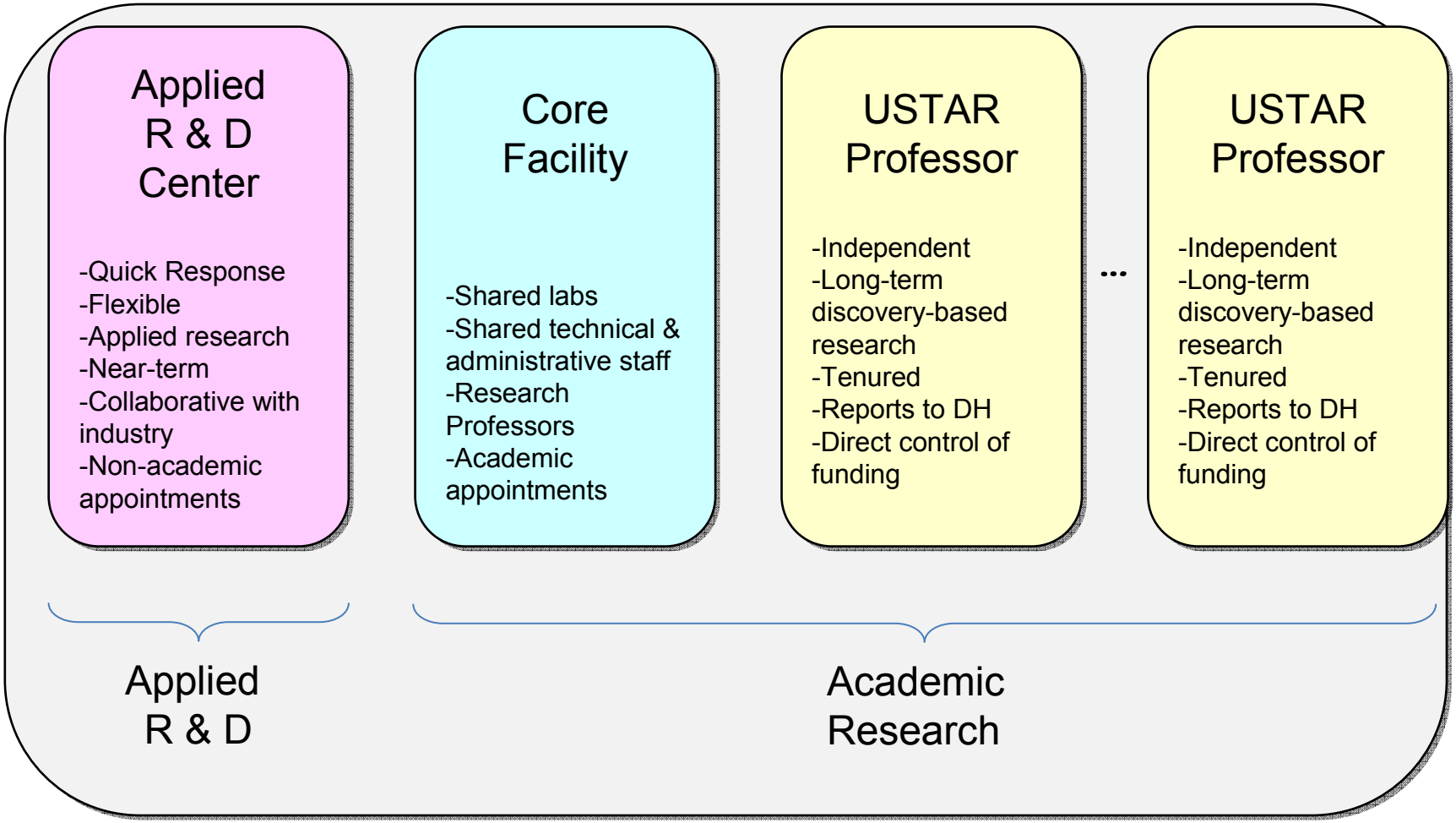
Hybrid Energy_Geothermal: John McClennan, Ph.D.

Hybrid Energy_Other: Manoram Misra, Ph.D. (Jan11)

Intuitive and Solar Buildings: Aravind Dasu, Ph.D.

TOIP Team: Al Walker, Scott Hill, Rob Simmons, Perry Thomson,

Components of each Innovation Focus Areas



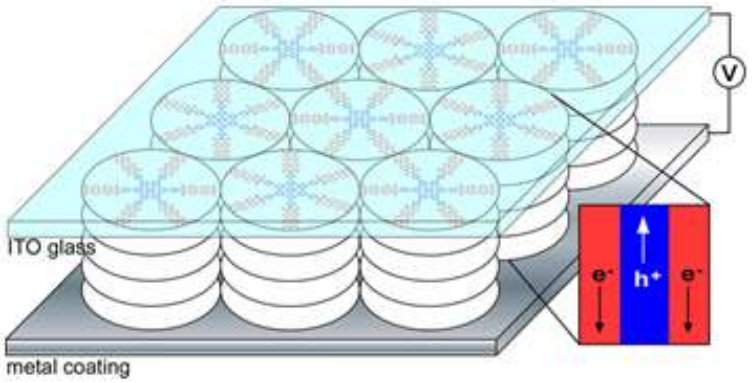
LIDAR cleantech (Alan Marchant, USU)

USU laser technology helping wind farms to generate more power

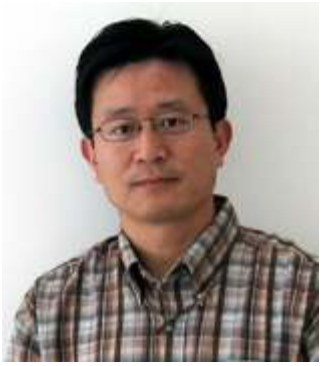
and oil producers to reduce air pollution

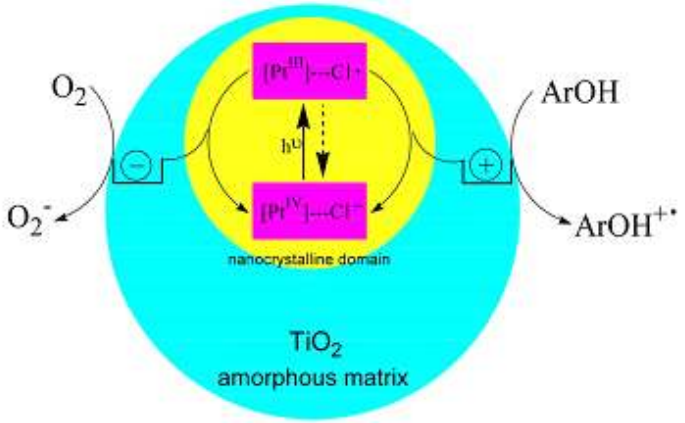
Next-gen solar (Ling Zang, U of U)

- New architecture for highly efficient solar cells



- Highly porous photo-catalysts





Sodium batteries (Anil Virkar, U of U)

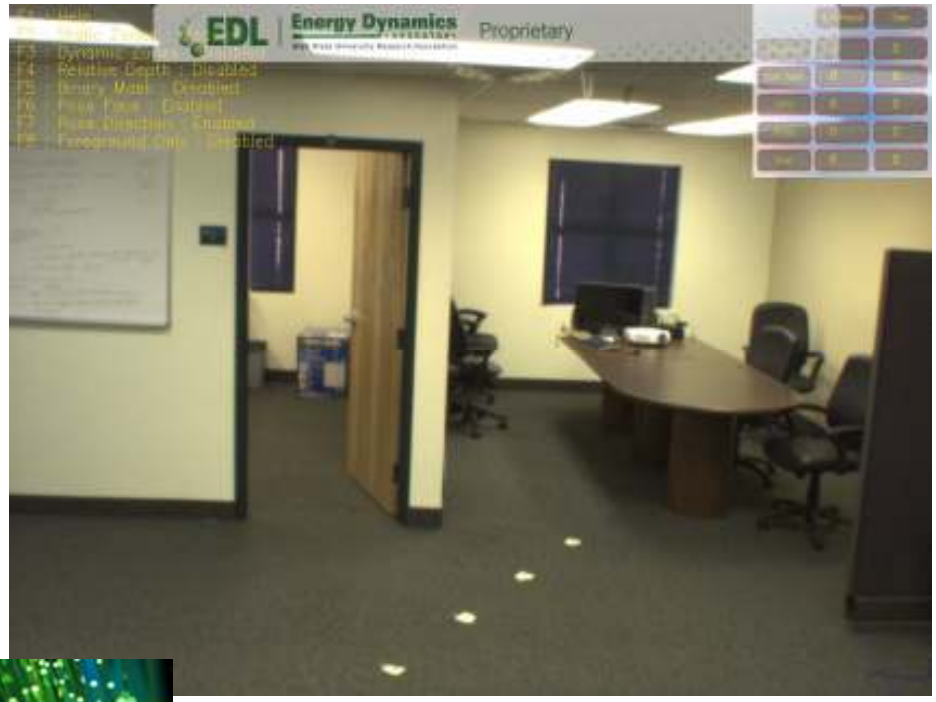
- High-capacity arrays that don't require scarce materials

Biofuels (Jeff Muhs, USU)

- Create bio-diesel and develop hybrid generation systems to make fossil fuel cleaner

Intuitive/Solar Buildings (Aravind Dasu, USU)

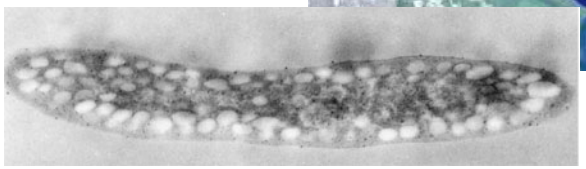
- Sensing systems to reduce in-building energy use, based on how people work and live

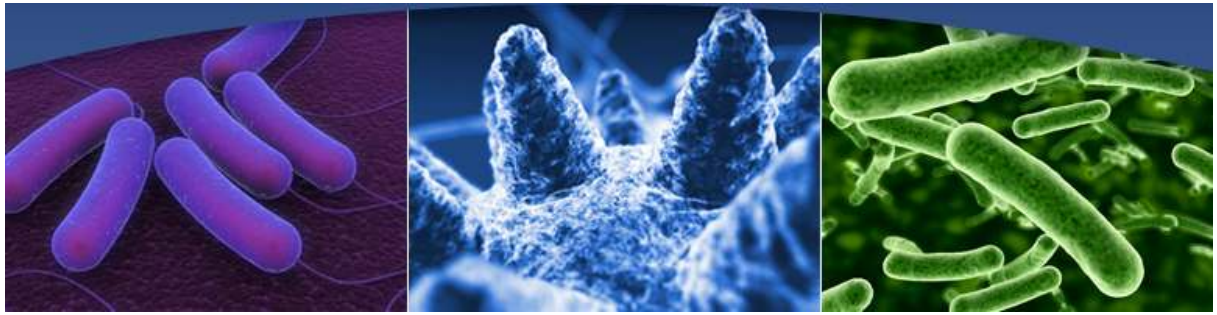


EDL | Energy Dynamics LABORATORY
Utah State University Research Foundation

Synthetic Bio-manufacturing (USU)

- "Teaching" single-cell organisms to excrete bioplastics, biofuels





USTAR Research Buildings

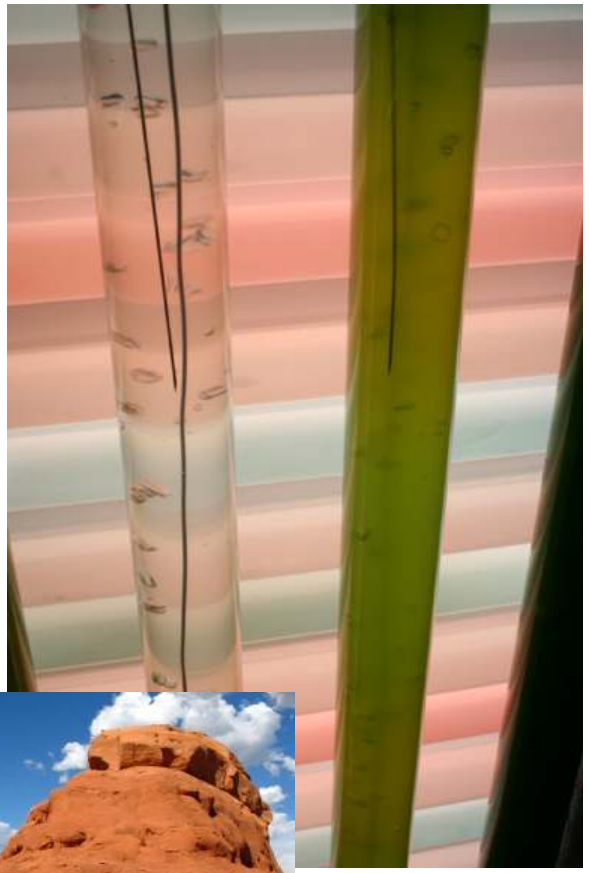
Industry-collaboration opportunities for biomass and solar technology

BioSafety Level 3 lab

Nanofabrication facility

Other Infrastructure

- SBIR-STTR Assistance Center
  - DOE grants
- USU Biofuels
- Info Tech & Renewal Energy Incubator (St. George)



Other Infrastructure

UtahStateUniversity
BINGHAM ENTREPRENEURSHIP & ENERGY RESEARCH CENTER

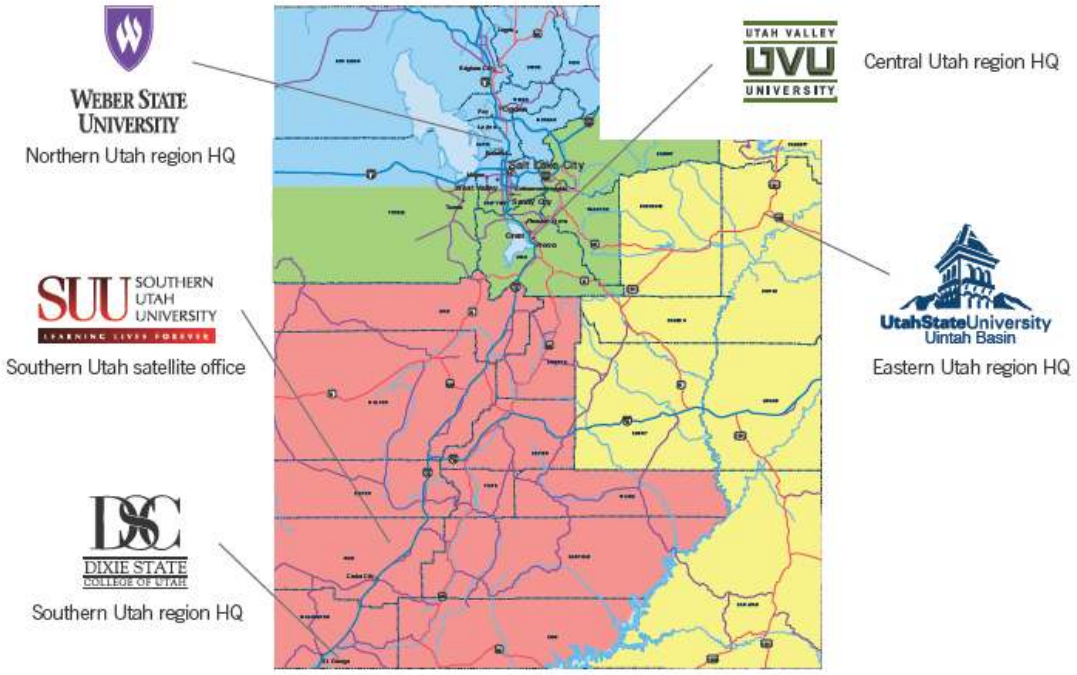
70,000 gsf Research Space: Opened August 2010

FUNDS RAISED Since February 2007
- **$23.4M in facility infrastructure**
- **$20M in new roads and infrastructure for research park and campus development**
- **$3M in new scientific equipment**
- **$2.5M DOE appropriation**
- **$4.5M from private industry**
- **$2.3 from local government**

TOTAL: $55.7M

Regional Technology Outreach

- Connect emerging and established companies with higher education innovators
- Projects in 19 of 29 counties
- Technology Commercialization Grants



Technology Commercialization Grants

- Funding (ARRA) typically = $30,000
- 76 projects at:
  - Dixie
  - DATC
  - WSU
  - UVU
  - SUU
  - SLCC
  - USU
  - U of U

- >60 percent have industry co-applicant

Technology Commercialization Grants

- Fast-track commercialization in seven markets including:
  - Cleantech/energy
  - Advanced composites

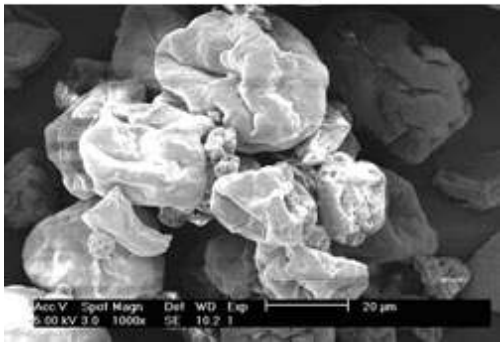
DOE and National Lab personnel evaluate Ares Motorsports' hybrid race car

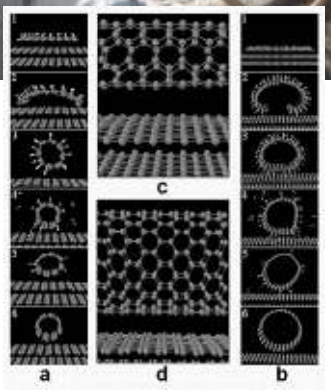
- Early results:
  - 19 complete prototypes
  - 27 patent and disclosures filings
  - 7 new sales distribution agreements

USTAR TCG examples

- Dry-process algae jet fuel
- Conditioned biogas from anaerobic digesters
- Low-cost graphene film for solar arrays
- Passive solar water heaters without roof installation

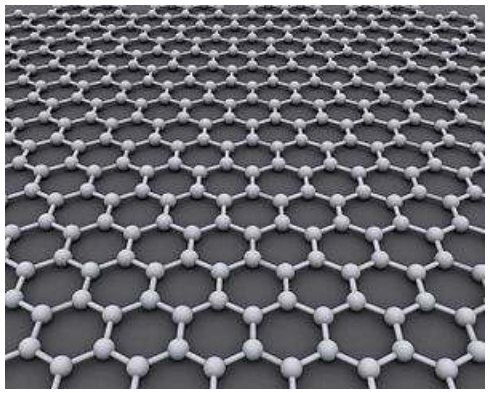
Electron microscope view of dried algae





Next TCG application round

- January 3, 2011 at noon MT
- “Ticket to the dance” = co-applicant with regional higher education faculty or administrators
- www.innovationutah.com/tcgrants.html



Next Center of Excellence (COE) application round

- November 22, 2011 at 8AM
- COE Website: http://goed.utah.gov/programs/coe/Centers-of-excellence-forms-guidelines/

Student Involvement: Business Plans

- 3 State-wide student contests can help Entrepreneurs to develop their plans
  - Tech Titans
  - Opportunity Quest
  - Utah Entrepreneur Challenge
- Website: Lassonde Center

Innovation Areas:

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BioDevice/ BioPharma

Medical Imaging & Brain Medicine

Nano-technology

Imaging & Digital Media

USTAR

Turning innovation into industry.

Connect with us to collaborate

Key Links for additional information

USTAR: www.innovationutah.com and http://newmedia.innovationutah.com/

BIG: http://innovationutah.com/BiG.html

SBIR: http://innovationutah.com/sbir.html

Marketing Director: momalley@utah.gov

Economic Development Summary

- Expanding the Research Infrastructure
  - 8 USTAR “Energy” Faculty and more being hired
  - Building upon the expertise of EGI, ICSE and other
- Commercializing Research
  - Energy Dynamics Lab at USU
  - TCG and COE Programs
- Improving the Competitiveness of Existing Industries and Enhancing the Science and Technology Workforce
  - Utah Cluster Acceleration Partnership: Energy
  - Southern Utah Renewable Energy Center (SUTREC)
- Increasing Access to Capital
  - Purple Energy, Renewable Tech Ventures
- Building Entrepreneurial Capacity
  - TechTitans, OpportunityQuest, UEC